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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/878,923	06/13/2001	Mark D. Roberts	28549/165405	2854

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EXAMINER
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TRAN, KHANH C

ART UNIT	PAPER NUMBER
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2631

DATE MAILED: 01/28/2004

14

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/878,923

Applicant(s)

ROBERTS, MARK D.

Examiner

Khanh Tran

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 17 September 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-52 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4, 7-10, 17, 18, 20-22, 25-28, 35-37, 40-44, 46 and 49-52 is/are rejected.
- 7) ☒ Claim(s) 5-6, 11-16, 19, 23-24, 29-34, 38-39, 45, 47 and 48 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. §§ 119 and 120**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.  
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_. 6) ☐ Other: \_\_\_\_\_

### **DETAILED ACTION**

1. The Amendment filed on 09/17/2003 has been entered. Claims 1-52 are pending in this Office action.

### ***Response to Arguments***

2. Applicant's arguments, see pages 11-18 of the Amendment, filed on 09/17/2003, with respect to the rejection(s) of claim(s) 1-4, 7-11, 14-15, 17-18, 20-29, 32-33, 35, 44, 46-52 under 35 U.S.C 102(e), and the rejection of claim(s) 5-6, 12, 16, 19, 30, 34, 36-43, 45 have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Wingard U.S. Patent 6,295,318 B1.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-4, 7-10, 17-18, 20-22, 25-28, 35-37, 40-44, 46 and 49-52 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wingard U.S. Patent 6,295,318 B1.

Regarding claim 1, Wingard invention is directed to a method of increasing data rate of the data transmitted over a limited bandwidth medium by using a modified pulse position modulation (PPM) scheme. Figure 2 illustrates an embodiment of a transmitting and receiving system according to Wingard invention. Input data signal 202 is encoded into a PPM encoded output signal consisting of a series of n-bit pulses with pre-defined pulse characteristic as shown in figure 3. In column 4, lines 17-67, Wingard teachings discloses that each pulse has a period equal to frame length and has a preferred duty cycle of 50%. Each frame transmits a single pulse at a rate not exceeding the bandwidth and the number of frames is equal to the bandwidth of the system. Each pulse is analyzed to determine whether the pulse that is currently being transmitted is overlapped from the period of the pulse that has been transmitted previously. When overlapping occurs, the receiver is not able to resolve the individual pulses. The current pulse of the PPM encoded output signal is inverted and shifted later in time relative to its current position in its frame to eliminate the overlapping. Wingard further discloses that in the event that inversion of the current PPM encoded output signal does not eliminate the overlapping, a blank with sufficient delay is inserted between the current PPM encoded output signal and the previous PPM encoded output signal.

Wingard, however, does not disclose inserting a time delay between two pulse trains resulting in a received signal quality measurement satisfying a received signal quality criterion.

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Nevertheless, it would have been obvious for one of ordinary skill in the art that the received signal quality criterion in Wingard teachings is the receiver's ability of resolving individual pulses. Furthermore, inserting a blank with sufficient delay if the inversion of the current PPM encoded output signal does not eliminate overlapping clearly suggests that the receiver make a measurement to determine if the current pulse is resolvable. As appreciated by one of ordinary skill in the art, the receiver informs the transmitter if more delay is needed between adjacent pulses.

Regarding claims 2 and 20, the ability of resolving individual pulses at the receiver is inherently based on certain threshold, which is the signal quality threshold.

Regarding claims 3 and 21, Wingard does not specifically disclose a time delay specified by at least one code element of at least one delay code. Nevertheless, Wingard teaches that insertion of a blank creates sufficient separation or delay between the two successive pulse periods so that the receiver may distinguish them. Furthermore, a blank consists of a plurality of zero-value pulses. Since a blank performs similar function as a delay code claimed in the patent application, it would have been obvious for one of ordinary skill in the art that a blank as taught by Wingard would be equivalent to a delay code at least in its simplest form as described in the patent application, and each zero-value pulse also corresponds to a delay code element in its simplest form.

Regarding claims 4 and 37, figure 3 illustrates a predefined pulse characteristic including a pulse width, a pulse period, and a frame.

Regarding claims 7, 25, 40 and 49, as recited in claim 1, Wingard discloses that in the event that inversion of the current PPM encoded output signal does not eliminate the overlapping, as stated in the rejection of claim 1 although it's not explicitly taught by Wingard, the receiver make a measurement to determine if the current pulse is resolvable and inform the transmitter if more delay is needed. Depending on the amount of delay, a blank comprising a plurality of zero-value pulses is inserted so that the receiver can distinguish individual pulses. The step, as claimed, of selecting a received signal quality measurement that satisfies a received signal quality criterion would correspond to the insertion of a blank with sufficient delay so that individual pulses can be resolved at the receiver. The step of delaying a pulse train by an amount of time equal to a sum of any inserted time delays that satisfy the received signal quality criterion as claimed corresponds to insertion of a blank with sufficient time delay so that the receiver distinguish individual pulses.

Regarding claims 8, 26, 41 and 50, as well known in the art, the received signal quality measurement is a function of signal strength, signal-to-noise ratio, and signal strength.

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Regarding claims 9, 27, 42 and 51, as recited in claim 1, pulse overlapping is determined based on certain threshold whether the receiver distinguish individual pulses. When overlapping occurs, the current PPM encoded output signal is inverted to effectively add a time delay to the current PPM encoded output signal.

Regarding claims 10, 28, 43 and 52, as recited in claim 9, when overlapping occurs, the current PPM encoded output signal is inverted to effectively add a time delay to the current PPM encoded output signal.

Regarding claims 17 and 35, as explained in claim 3, each zero-value pulse corresponds to a delay code element in its simplest form. The zero-value pulse specifies a time delay value.

Regarding claim 18, since the PPM encoded signals, as taught by Wingard, is time-varied signals, claim 18 is rejected using the same rejection argument of claim 1.

Regarding claim 22, the amount of delay between adjacent pulses is varied depending on how much time offset is needed to alleviate overlapping. Hence, a characteristic of the time-varied signals is varied in accordance with an amount of delay, which is specified by the zero-value pulse.

Regarding claims 36 and 44, said claim is rejected using similar rejection argument of claim 3. Furthermore, Wingard system operates in wide-band communications medium as described in column 4, lines 1-49. A blank inserted between adjacent pulses; as taught by Wingard, corresponds to a delay code, and zero-value pulse corresponds to a code element in a simplest form as described in the patent application.

Regarding claim 46, the amount of delay between adjacent pulses is varied depending on how much time offset is needed to alleviate overlapping. Hence, a characteristic of the time-varied signals is varied in accordance with an amount of delay, which is specified by the zero-value pulse.

#### ***Allowable Subject Matter***

4. Claims 5-6, 11-16, 19, 23-24, 29-34, 38-39, 45, 47-48 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

#### ***Claim Objections***



5. Claims 19 and 45 are objected to because of the following informalities: claims 19 and 45 have been amended in the Amendment filed on 09/25/2002, but listed in the Amendment filed on 09/17/2003 as the original claims. Appropriate correction is required.

***Conclusion***

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Khanh Tran whose telephone number is 703-305-2384. The examiner can normally be reached on Tuesday - Friday from 08:00 AM - 05:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammad Ghayour can be reached on 703-306-3034. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9314.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-3800.

KCT

  
**KHAI TRAN**  
**PATENT EXAMINER**